

B83 Parachute Awarded Patent

At Tonopah Test Range recently, an improved Honest John rocket fielded by Department 1630 blasted off the launcher, burned for three and a half seconds, achieved a velocity of Mach 1.4, and separated from a B83 test unit.

At 14.4 seconds after launch, the B83 parachute deployed, and 18 seconds after launch, it was all over. The test unit quietly impacted into the smooth surface of TTR's dry lake bed target.

Don Johnson of Parachute Systems Division 1632 felt pretty good. The deployment and inflation of the ribbon parachute looked good — that means a new supplier had been qualified to make B83 production parachutes. Secondly, Don had just received word that his design for the B83 chute received a patent assigned to the U.S. Air Force.

Don designed the 46-foot-diameter B83 parachute, guided it through development phases, and is now responsible for development and early production unit testing. There have been many tests of the B83 parachute — in Area III using rocket sleds and at TTR using various supersonic Air Force and Navy aircraft.

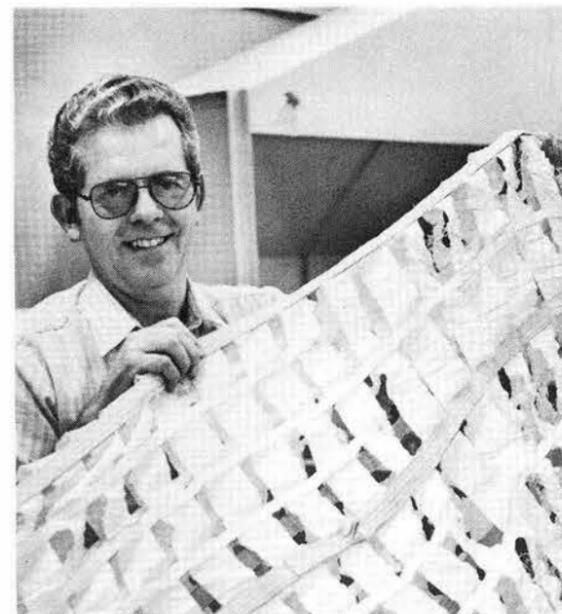
When extended, the B83 parachute is 70 ft. long. It compresses into a pack 16.5 inches in diameter and 42 inches long weighing

225 pounds. It's made from a combination of Kevlar and nylon. Kevlar is more than twice as strong as nylon per unit weight. The nylon is used, however, because of its elasticity. Nylon can stretch as much as 25 percent without breaking or losing its strength — a desirable characteristic in a parachute. The stretch absorbs some of the shock of supersonic deployment.

Don's patent relates to the construction of the continuous ribbon parachute. It provides for maximum parachute symmetry that, in turn, minimizes the number of local stress concentrations.

A conventional ribbon parachute is con-

(Continued on Page Four)



INVENTOR Don Johnson (1632) displays construction details in the B83 parachute that recently received a patent.

Bond Drive Starts Monday

The annual campaign to sell U.S. Savings Bonds to Sandia employees through payroll deduction starts Monday. Dick Andes (0110), 1983 Sandia Savings Bond committee chairman, reports that the goal of this year's drive is to increase participation — 87 percent of Sandia employees are currently enrolled in the Savings Bond program. The minimum deduction will increase from 25 cents per week to \$1.

"Bonds are a more attractive investment than ever before," Dick says, "particularly for those with small savings programs. Since last November, Savings Bonds have had a market-based rate of return. It is currently 11.09 percent for bonds held five years. This is a very good return. Although the rate is adjusted every six months, it will never fall below 7.5 percent. The Savings Bond guarantee is unique — I know of no saving institution that accepts small savings, pays market-based rates, and still guarantees a minimum return no matter what turn the market takes.

"Bonds have always had special tax advantages," Dick continues. "Interest earned on Savings Bonds is exempt from state and local taxes. Also, Bonds provide advantages in saving for the college education of children."

Dick reports that all employees who participate in the payroll deduction plan for Savings Bonds will be asked to sign new deduction cards during the coming campaign. The new cards are needed for the



BIG BOND SUPPORTERS — With the approving eye of FDR, union presidents at Sandia affirm their support of the upcoming U.S. Savings Bond drive at the Labs with Dick Andes (0110), campaign chairman, seated at right. At top are Robert Stewart (3435), president, International Guards Union, Local 27; and Conrado Otero (7482), president, Metal Trades Council. Seated at left is Albert Miera (0154), president, OPEIU, Local 251. The Bond drive starts Monday.

new bi-weekly payroll system to authorize a consistent deduction for each pay period.

"The old 25 cent minimum is out of date and a bookkeeping headache, frankly. It needed to be changed. A \$1 minimum makes good sense," says Dick.

Employees who still wish to purchase one Bond a year with a single deduction may do so by checking this option on the card. The amount specified will be deducted from the July 21 paycheck.

This year's Savings Bond campaign will be about the same as the drive conducted last year, Dick says. Directorate coordinators will handle the drive within their

organizations. Meetings, film presentations, and individual solicitations will vary within organizations. The drive will wind up April 29 and the results reported in the LAB NEWS, soon after.

President George Dacey, Albuquerque chairman for the Savings Bond drive, has written to all Sandia employees asking for their support. "As employees of a laboratory funded by federal dollars, we have an obligation and an opportunity to express our loyalty by buying U.S. Savings Bonds," he said. "I thank you for your past participation, and if you are not currently a participant, I urge you to join the program."

Antojitos

Adios, Aficionados de Atletismo--It's nearly two weeks ago that Albuquerque was deluged with 15,000 NCAA Final Four fans. And with wind, snow, cold, and clouds. The most incisive comment about the weather came in the form of a riddle: Did you hear about the new 51st state? New Mexico had a little son. (It came on Saturday, I believe.)

I want to warn any of the visitors contemplating a move to the Southwest that, although New Mexico sits along the south border of the country (and Albuquerque in fact is south, in terms of latitude, of Raleigh, NC), it also sits high--Albuquerque's average altitude (5000 feet) is, in fact, greater than the highest point in 30 states. That means it can get cold, even in April.

Windy too. While I have never been a fan of wind, so to speak, I have to admit that wind tends to concentrate trash and tumbleweeds quite efficiently--most of it/them along KAFB's east fence. In this way, wind is like impending execution, as Dr. Johnson described it--"When a man knows he is to be hanged in a fortnight, it concentrates his mind wonderfully."

* * *

April Fool's Day Revisited--Well, That Day has come and gone, leaving behind it a LAB NEWS that honored the occasion more in the breach than in the observance. Yes, the photo on the April 1 backpage (for all but those subscribers who found a mailing label in that space) was (im)properly tongue-in-cheek, but we foreswore further assaults on the dignity of the Labs out of respect for our lead story--the State of the Labs interview with President Dacey. What you missed: a story on a Combustion Research Facility experiment that involves a gigantic engine which Sandia researchers can enter to study combustion directly; a photo of the new Coyote Canyon test facility that is primed by the sacrifice of vested virgins; an article noting that Jack Howard is returning to Sandia to get us all shaped up again; and a psychology column entitled "Guilt Without Sex." The front page would have carried our stirring slogan: If It Happened at Sandia, It's News to Us. Ah, well, another time (and maybe another place). ●BH

El que solo se ríe, de sus maldades se acuerda. (The one who laughs alone remembers his mischief.)

Savings Bonds' New Market-Based Rates

President Reagan has signed into law legislation eliminating the ceiling on U.S. Savings Bonds interest. Effective November 1, 1982, the interest rate on Bonds held five years or more will now be 85% of the average market rate on five-year Treasury securities during the same period. This new rate applies to all new Series EE Bonds held five years or longer - and all older Series E Bonds (purchased after November 1947), and EE Bonds and Savings Notes (Freedom Shares) held at least five additional years.

There's no limit on what you can earn with this new market-based rate. If market rates remain at their current 13% level, your Bonds earn about 11% tax deferred. If rates go higher, your Bonds will follow this upward trend. And if market rates drop to very low levels, your Bonds are protected. This protection is in the form of a guaranteed minimum interest rate. Bonds held at least five years after November 1, 1982 are guaranteed to earn no less than 7.5% interest, even if market averages fall far below 7.5%. This protection is not offered by any financial institution on their securities or market-based instruments. So Bond owners get the advantage of market rates without the risk.

How It Works

Twice each year, the Treasury will determine the market-based rate for interest periods that begin in the next six months. This rate will be 85% of the average market return on five-year Treasury securities during the previous half year. Over the next five years, the interest rate on Bonds will change 10 times. At the end of five years, these 10 semiannual averages are added, and averaged to determine a Bond's five-year yield. Bonds held less than five years will earn interest on a fixed, graduated scale. (5.5% after one year, rising 0.25% each six month period thereafter, to the minimum guaranteed five-year yield of 7.5%)

Additional Market-Based Rate Information

- Savings Bonds held beyond November 1987 earn additional semiannual averages and are figured in and compounded at the same market-based method used in current calculations.

- Savings Bonds purchased prior to November 1982 have higher guaranteed minimum interest rates. Most of the old Series E Bonds have a guaranteed minimum rate of 8.5%. These older Bonds will automatically earn the new market-based rate, provided they are held until November 1987.



Thumb twiddlers, take count. Horace Knowles of Washington, D.C., has patented a plastic device with two holes for the thumbs, a crankshaft, and an electronic counter to keep track of revolutions. He says the invention can "improve the pleasure of thumb twiddling for even those highly skilled in the art."

— Science 83

Congratulations

Kathleen (7233) and Carl (9345) Diegert, a son, Kurt Wagner, March 19.

Cheryl (2629) and Tim Walker, a daughter, Alina Del, Feb. 18.



Published Fortnightly on Fridays

SANDIA NATIONAL LABORATORIES

An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA
TONOPAH, NEVADA

Editorial Offices in Albuquerque, 87185
Phone 505/844-1053 FTS 844-1053
In Livermore 415/422-2447 FTS 532-2447

BRUCE HAWKINSON, Editor
DON GRAHAM, Assistant Editor
CARL MORA, NORMA TAYLOR, writers
LOUIS ERNE, photographer
GERSE MARTINEZ, assistant
BARRY SCHRADER, Livermore reporter

Member, International
Association of Business Communicators



NM MINORITY SUPPLIER DEVELOPMENT Council members toured Sandia last month and became acquainted with the complexities of dealing with government contractors. Here, Dave Bickel (7535) explains the features of the rocket sled track.

Supervisory Appointment

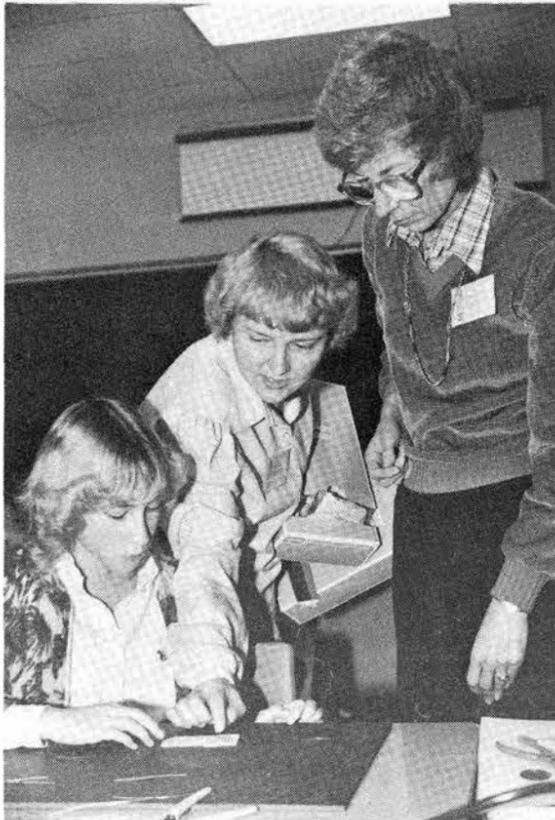


STAN SERPA to supervisor of Material Processing Section 8262-3, effective March 1.

He has been employed at Sandia Livermore in stores and receiving for 22 years.

A native of Livermore, he and his wife now reside in Oakdale.

They have two grown sons. Stan does some ranching there and raises registered Brahman cattle. Last year he showed the Grand Champion Female Brahman at the Grand National Livestock Exposition at the Cow Palace, San Francisco.



"EXPANDING YOUR HORIZONS in Science and Math" is the title of an annual career conference for 7th to 12th grade girls held recently at Chabot College Valley Campus. Sandia co-sponsored the event. One of the participants learned how to solder electronic components onto a printed wiring board with the help of Susan Gancas (center) and Glenda Muir (right; both 8466). Judy Knorr (8414), Lynda Hadley (8413), and Lois Johnson (8444) also took part in the one-day conference, the third that Sandia has supported.

Take Note

Monte Nichols (8313) has been elected a Fellow in the Mineralogical Society of America. The honorary title recognizes his considerable research contributions in the area of mineralogy since 1960. He has also been elected to the board of directors of the International Centre for Diffraction Data's Joint Committee for Powder Diffraction Standards. This is a nonprofit organization based in Swarthmore, Penn., which collects, edits and publishes x-ray diffraction standards for the scientific community.



SANDIA LIVERMORE NEWS

VOL. 35 NO. 8

SANDIA NATIONAL LABORATORIES

APRIL 15, 1983

Heat Transfer Code

No Chile On This TACO

At first glance, it might seem that TACO is just another Mexican recipe. Not quite. It's an acronym for Thermal Analysis CODE — a computer program that performs heat transfer calculations. The chef — er, author — is Bill Mason of Structural Mechanics Division 8122.

"The code is based on a numerical procedure called the finite element method," says Bill. "In this method, a body is divided up into discrete sections called elements and the mathematical equations describing the problem are formulated separately in each element. All of the elements are then combined and the total problem is solved for the temperature and heat flow throughout the body. This process is especially well-suited for the computer.

"Other finite element heat transfer codes have been developed. However, TACO offers several special features not generally found in other codes. In addition, it has been written so that it is very efficient when used on computers with vector processors such as the Cray computer at Sandia."

TACO has many applications at Sandia. In the solar area, it can, for example, be used to solve problems involving enclosure radiation, which is an interchange of radiant heat between surfaces of an enclosure. Such an interchange can take place in a solar collector. In weapons work, TACO can be used to calculate the heat transfer within and between the various components that make up a weapons system.

The code can be used in combination with several finite element stress analysis codes to solve thermal stress problems. Such problems arise where a body is confined so that it is not completely free to expand when heated, for example a metal bar wedged between two rigid walls.

TACO is being used to help solve problems in electrical resistance welding where an electrical current is passed through metal parts held together under force. The current melts the metal, producing a plastic flow of material and formation of metallurgical bonds between the parts. Upset welding used to connect cylinders or bars end-to-end and pinch welding used to close off tubes are examples of this type of welding.

"A modified version of TACO is used to solve the combined electrical and thermal parts of the electrical resistance problem," Bill says. "It calculates the electrical current distribution and the temperatures in the parts being joined. It's coupled with a stress analysis code to determine the deformation of the material and the thermal stresses produced during the welding process."

Bill wrote an earlier version of TACO



TACO is not a taco, says Bill Mason (8122) as he holds an object that would have great difficulty interfacing with a computer. Bill is the creator of Thermal CODE — or TACO — a computer program that performs heat transfer calculations.

while he was at Lawrence Livermore National Lab. After joining Sandia in 1980, he developed the present improved version of TACO. Actually, Bill has been writing similar programs for 16 years.

"TACO was first written to solve problems in bodies which could be represented in two dimensions," says Bill. "3-D is the next step up for geometrics that can't be described in 2-D. This last year I've been doing work in 3-D, which is now being made available to users for MX thermal calculations and other applications."

Now imagine someone writing a program called "Quotidian Unified Information Code for Heat Exchangers," or, you guessed it, QUICHE. Real engineers probably wouldn't use it.

Sympathy

To Sheryl Johnson (8500) on the death of her sister in Greenville, Ill., March 14.



AN HONEST JOHN ROCKET, fielded by Department 1630, blasts off its launcher at Tonopah Test Range carrying a B83 parachute test unit. (Photo by Diana Root, EG&G.)

Continued from Page One

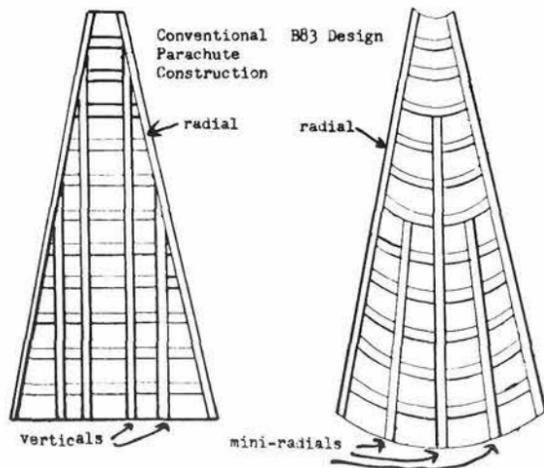
B83 Parachute

structured in triangular sections called gores which are defined on the sides by slanting webbing material called radials. Within the space outlined by the radials, the ribbons must run horizontally and vertically. Where the vertical ribbons intersect the radials, they are sewn together making a bulky connection. Frequently, the joints are not exactly perpendicular causing unwanted tearing stresses on the horizontal ribbons.

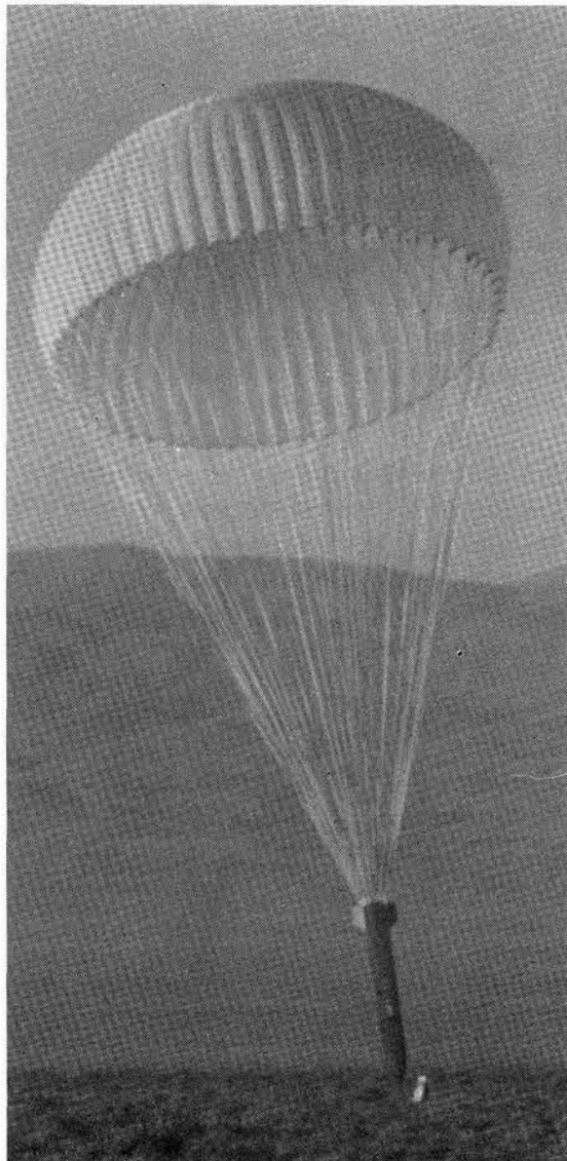
Don's invention eliminates the intersections of the vertical ribbons with the slanting radials. In Don's design, the vertical ribbons extend from the bottom of the triangle and stop before meeting the radials. By alternating Kevlar and nylon materials and allowing for the dissimilar stretch characteristics, Don's design maintains the structural integrity of the parachute.

In addition, the patent covers fixtures used during layout and basting together of the parachute. These fixtures improve alignment of the ribbons and speed up the job of assembling the parachute.

More testing of the B83 parachute, part of systems development testing conducted by Department 8150, is scheduled at TTR later this year. Different military aircraft, including the new B1, will drop the test units.



THE DRAWING shows the difference between conventional continuous ribbon parachute construction and the B83 design. Conventional chutes are sewn in flat triangular sections called gores. The B83 is constructed on a circular fixture. Note that mini-radials do not intersect the side radial sections.



B83 TEST UNIT floats to impact at TTR. The design of the continuous ribbon chute by Don Johnson (1632) was recently awarded a patent assigned to the U.S. Air Force.



AT SANDIA'S PARACHUTE LAB, Kenneth Ronquillo (front) and Richard Brazfield (both 1632) prepare a 70-foot-long B83 parachute for packing. Completed pack is 16.5 inches in diameter and 42 inches long. It weighs 225 pounds.

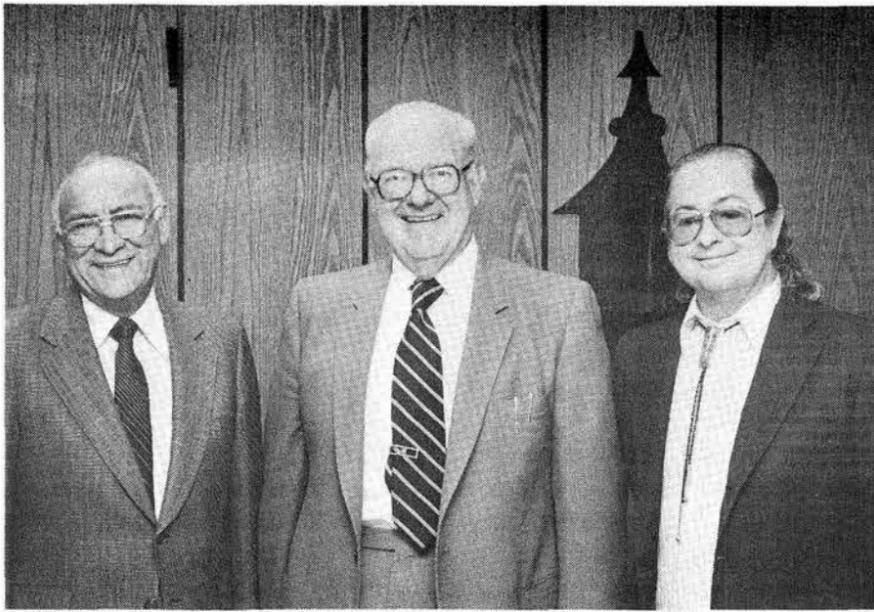
Events Calendar

- Through May 1 — "Hamlet, Prince of Denmark," Vortex Theater, Fri. & Sat., 8 p.m., Sun. 2:30 p.m., 247-8600.
- April 16-17 — Cactus Show & Sale, free, 2-6 p.m. Sat., 11 a.m. - 5 p.m. Sun., Albuquerque Garden Center.
- April 17 — Albuquerque Civic Chorus Spring concert, free, 7:30 p.m., St. John's Episcopal Church, 4th & Silver; April 24 — 4 p.m., Sandia Baptist (Constitution & Moon NE).
- April 20 — Latin American Feast of Film, "Empire of the Sun," 7 p.m., auditorium, Albuquerque Museum.
- April 21-23, 28-30 — "Candide," Broadway musical, 8 p.m., Rodey Theater, UNM, 277-4332.
- April 21-24 — Ice Capades, Tingley Coliseum, State Fairgrounds, 265-1791.
- April 22 — NM Jazz Workshop, "Mystery" concert, 8 p.m., KiMo.
- April 22-23 — NM Symphony Orchestra concert with pianist Idil Biret, 8:15 p.m., Popejoy.
- April 22-24, 29-May 1 — "Whose Life Is It Anyway?" with Dolores Gravning (6120) and Bill Carstens (ret.), Albuquerque Little Theatre, 242-4315.
- April 23 — Spring Arts & Crafts Show, Opera House, State Fairgrounds, 243-4067.
- April 23-24 — Garden Center Spring Fair: plants, crafts, free, 9 a.m. - 5 p.m., Albuquerque Garden Center.
- April 24 — The McClain Family Band, bluegrass music from eastern Kentucky's Appalachian Mts., First United Methodist Church, 4 p.m.
- April 28-29 — "Barnum," hit musical, 8:15 p.m., Popejoy, 277-3121.
- April 29-30, May 6-7 — "Carmen," Albuquerque Opera Theater, 8:15 p.m., KiMo.
- April 29-30 — The New Mexichords, Albuquerque Chapter of Society for Preservation and Encouragement of Barbershop Quartet Singing in America, presents "Les Girls." 8 p.m., First United Methodist Church (4th & Lead).

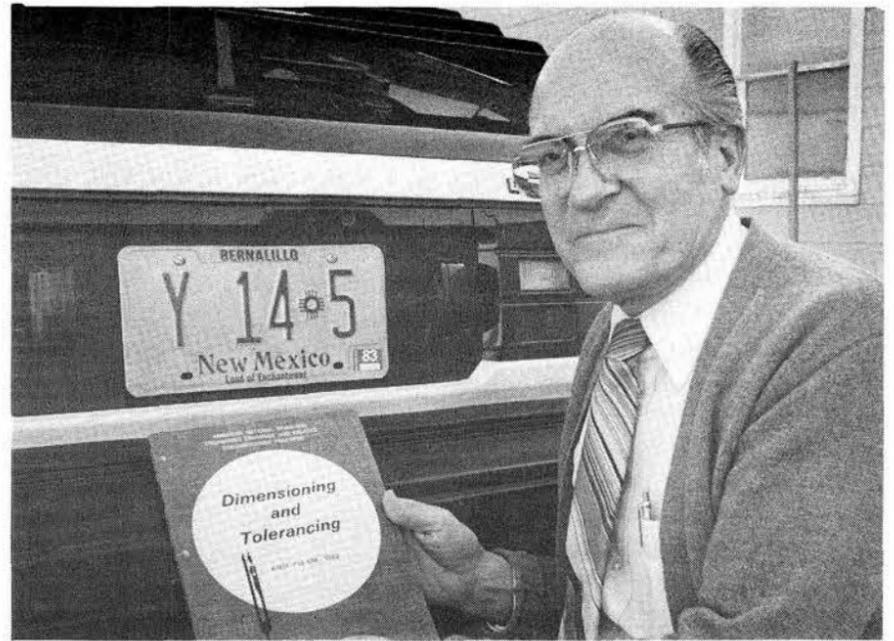
Retiree Deaths

(Jan.-March 1983)

Edward Chavez (68)	Jan. 13
Edward Latimer (83)	Jan. 20
John Ranson (84)	Jan. 23
Ralph McClure (69)	Jan. 26
John Shine (70)	Feb. 2
James Kimbrough (75)	Feb. 2
Larry Estabrook (64)	Feb. 8
Thomas Bone (81)	Feb. 15
Samuel Cummins (61)	Feb. 15
Livinus De Smet (65)	Feb. 17
Silas Shane (68)	March 1
Frank Zamora (60)	March 8
Harry Pastorius (62)	March 8
Adelina Lucero (63)	March 12
John Platero (69)	March 14
Benino Jinzo (76)	March 21
Lonnie Johnson (68)	March 20
Ralph Niebel (72)	March 21
Walter Myers (48)	March 31



TWO OFFICERS of the American Indian Science and Engineering Society flank President Dacey during a Society board meeting last month. On the left is A.T. "Andy" Anderson, a Mohawk who was (until his untimely death since this photo was taken) executive director of the group; and on the right is Tom Dawson, a Cherokee who is chairman of the board. The Society's goal is to increase the pool of Indian people trained in the sciences and engineering. To this end, the board plans its fourth national conference, in Albuquerque, this November. Dick Fairbanks (3511) is conference chairman, and Sandia's American Indian Outreach Committee will play a key role in planning and running the event.



Y14.5 OBVIOUSLY has a special meaning for Phil Nicovich (2458). That's because he's chairman of an American National Standards Institute committee of 24 experts from all over the country who spent nine years revising the *National Standard on Dimensioning and Tolerancing*, or Y14.5, book in his hands. Actually, the new edition is Y14.5M, with the M indicating that it's in metric units; it also features a closer alignment with international practices. A reference work for mechanical engineers and design definition people, the book includes a few Sandia drawing practices (as do some recent publications by the International Organization for Standardization).

Take Note

Al Narath (10) will deliver the opening address, "Federal R&D and the Future of the DOE National Labs," at the 19th Annual Symposium of the NM Chapter of the American Vacuum Society on April 26 at the Convention Center. No registration fee is charged for the keynote address, but the fee for the remainder of the three-day event is \$50 (or \$20 per day). Contact Jerry Nelson (1823) on 4-5200 for registration information. (Some openings for short courses in vacuum technology — contact Raymond Berg, 2564, on 4-1668 for those.)

* * *

Luke Vortman (7111) is this year's chairman of the national membership committee of the American Nuclear Society. He'll be happy to show prospective members the advantages of belonging to the Society. Call him on 4-7563.

* * *

Help is needed by the officials of the International Science and Engineering Fair to be held in Albuquerque during the week of May 9. More than 1500 visitors — students, families, and sponsors — are expected. Volunteers are needed to staff information booths at the Convention Center, airport, and the Regent hotel. About 80 volunteers are needed. If you can help, call the Science Fair office at 842-0431 or 842-0432.

* * *

The New Mexico Academy of Science (NMAS) is seeking new members. An affiliate of the American Association for the Advancement of Science, NMAS is the organization in New Mexico that brings together scientists from public schools, universities, national laboratories, and industry.

NMAS supports the following ongoing activities: Junior Academy of Science, Summer Science Training Program for outstanding secondary school students, Visiting Scientist Program, Science Education Task Force, *The New Mexico Journal of Science*, and an annual meeting.

Annual dues are \$15 for university and industry scientists. Anyone interested in membership should contact Marvin Wilkenberg, NMAS president, Graduate Office, NMIMT, Socorro, NM, 87801.

* * *

The Tierra del Sol Council of Camp Fire is sponsoring day and resident camps for youth this summer. The day camps will operate at two Albuquerque locations — Monte Vista Elementary School, 3211 Monte Vista Blvd. NE, and West Mesa High School, 6701 Fortuna Rd. NW. Hours are from 7 a.m. to 6 p.m. Field trips, an overnight camping trip, music, drama, swimming, games, and sports are included in the day camp programs. Open to youngsters age 5 through 13, the day camps are scheduled May 31 to Aug. 12. Fee is \$45 for a full-day week and \$25 for a half-day week. A membership fee of \$8 is required for non-members of Camp Fire.

The resident camp is located in the Jemez Mountains near Cuba and offers horseback riding, backpacking, cookouts, nature study, and arts and crafts. Open to boys and girls age 6 to 16, the camp will run from June 13 through Aug. 1. Camp fees range from \$35 to \$200 depending on the type of camp and length of stay. For further information, call the Camp Fire Center, 265-8786.

* * *

New Mexicans for Space Exploration is an organization devoted to furthering the space program and to informing the public about it. The group plans several projects and welcomes the participation of like-minded persons. NMSE's next meeting is April 28 at 7:30 p.m. in the basement of the Albuquerque National Bank, 4401 Central Ave. (at Washington). Call Georgianna Kues at 265-0489 for more info.

* * *

"Truth and Non-Violence: The Foundations of Gandhi's Philosophy" is a presentation by Fred Stern, chairman of the philosophy department at UNM, at the Albuquerque Public Library (5th and Copper) on

April 23 at 11 a.m. The program is free.

* * *

The next AMSE awards banquet is on April 21 at the Sheraton Inn Old Town. The topic of guest speaker Mark Tennant's talk will be "100 Days as an ASME Congressional Fellow." Tickets are \$10 a person with no-host bar from 6 to 7 and dinner at 7. Reservations must be made by April 19. Call Gil Benavides (4-6308) or Kathleen McCaughey (4-1573) for more info and reservations.

* * *

Discussions to "enhance the public's awareness of the nature of national security and U.S. military police . . . in areas that affect arms control efforts" will be held on April 19 at 7:15 p.m. at 1521 Muriel NE and on April 20 at noon at the Hilton Inn. The latter requires a reservation — 242-9271. The discussions are sponsored by the League of Women Voters.

* * *

Day camp and youth group leaders, current and prospective, can learn necessary skills at a two-day seminar, sponsored by the American Camping Association, on April 22-23 at the Immanuel Presbyterian Church (114 Carlisle SE). Curriculum includes crafts (on Friday) and songs, games, archery, outdoor cooking, nature, survival on a rainy day, and more (on Saturday). Both days for \$8. LAB NEWS has registration forms. More info from Shirley Sallach on 298-5366.

* * *

The Gold Wing Road Riders Association is sponsoring a day of motorcycle sports events to benefit the Los Lunas Hospital and Training Center. Called the "Road Runner Charity Run," the event starts tomorrow at 7 a.m. with hot air balloon rides (weather permitting) at the New Mexico State Fair Grounds. A "poker run" follows with motorcycle riders picking up cards at various check points — the rider with the best poker hand wins. In the afternoon, there will be skills events and dealer displays. Admission is \$1. For more information, call Jerry Brock (7481), 865-4055.

VIA to Help Albuquerque

Coinciding with President Reagan's designation of April 17-23 as "National Volunteer Week," Sandia is establishing a new program, Volunteers in Action. VIA will be a clearinghouse designed to link community needs with persons seeking volunteer opportunities that suit their personal interests and talents. Volunteers may be on-roll or retired employees and their families.

This Monday a letter from President Dacey providing details about VIA will be distributed to all employees. In the letter, he invites "all who are interested to use Sandia's Volunteers in Action program to find opportunities for useful and personally rewarding volunteer community activities."

Sandians have traditionally volunteered for all kinds of activities. Some are as undramatic as bringing a dog to brighten an elderly person's day; others are as spectacular as flying food and medical supplies to isolated communities in the Chihuahua mountains of Mexico.

But recently, voluntarism has received increased attention as a way of helping to meet the needs of others, with the emphasis on private, local initiative. While it's true that many citizens, including Sandia employees and their families, are already volunteers, it's also true that in a city the size of Albuquerque it is often difficult for citizens to find volunteer opportunities with community organizations in which they have an interest. The result is "unemployment" or "underemployment" of potential volunteers — in other words, a failure to use citizens' skills for volunteer community activities most effectively. At the same time, as one of the state's major private employers with a history of active community involvement, Sandia is depended upon as a community leader and resource. Many agencies throughout Albuquerque can use volunteer help. The purpose of VIA is to put interested employees in touch with those agencies.

In future issues, LAB NEWS will carry notices of volunteer work opportunities and other VIA items in a special section similar to the volunteer announcements in the box.

VIA coordinator Karen Shane (3163) will be glad to provide further information on the program. She can be reached on 4-3268.



ANN NOKES is involved in too many volunteer activities to mention here, but the LAB NEWS camera caught up with her one morning at All Faiths Receiving Home for homeless children. Here Ann is introducing a young resident to the playground facilities. Ann is the wife of Dave Nokes (9344).



Here are some current volunteer opportunities. If you are interested in any of them, call Karen Shane (4-3268).

New Mexico Children's Psychiatric Center needs a weekend crew to build a fence around a small playground. Materials have been purchased; volunteer labor is needed to erect it.

CONTACT is a crisis intervention and information and referral service that will be opening in June. The group needs a board member as well as volunteers to staff its 24-hour-a-day hotline.

The Albuquerque Wildlife Federation could use help tomorrow in maintaining the Piedra Lisa Trail in the Sandias. There's work to be done also at the trail heads for those who prefer not to hike.



ONE of Mike Rex's (3521) volunteer activities is to visit nursing homes and children's hospitals with a pet from the Humane Society. "It's wonderful therapy for both young and old shut-ins," says Mike, "and the animals also enjoy the excursions." Here Ernestyne Tibbits, a resident of the Four Seasons Nursing Home, is getting acquainted with a (mostly) cocker spaniel. Incidentally, this appealing pup and many others are available for adoption at the Humane Society.



CIVITAN Club members (l to r) Harry Saxton (2520), Jack Mecholsky (1845), and Dick Elrick (9422) ponder their work at Navajo Elementary School. The Club recently completed an indoor recreation area consisting of an adobe-enclosed area, a kitchen, an arts and crafts area, and sections for plants and animals.



THE ST. JUDE EXPRESS is a volunteer organization that brings medical assistance and food to the Tarahumara Indians of Chihuahua and various Indian reservations in the U.S. Southwest. From the left, Glenn Elliott (9238), Larry Chavez (3741), Jose Chavez (3421), Greg Donohoe (9238), Bob Davirs (0312), and Walt Henderson (ret.).



GUENTER FIEG is a visiting scientist working in advanced nuclear reactor safety in Division 9421.

Foreign Scientist

Guenter Fieg Loves Mountains

(Ed. Note — This is another in a series of articles about foreign scientists working under various international agreements in Jack Walker's Advanced Reactor Research Department 9420.)

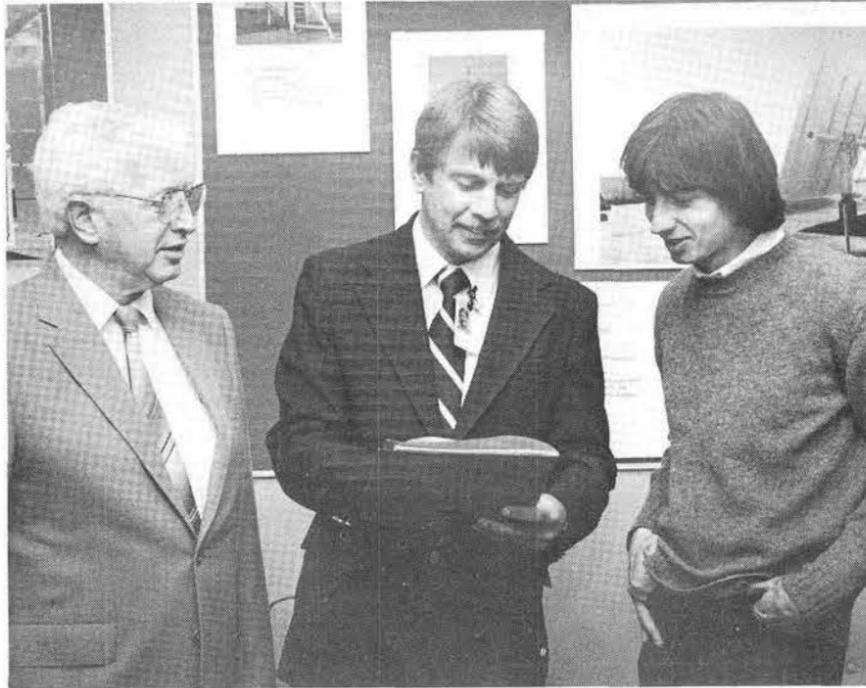
Guenter Fieg, completing his third year at Sandia, conducts debris bed experiments in Ted Schmidt's Post-Accident Heat Removal Studies Division 9421. He is concerned with the safety of advanced fast breeder reactors.

"The fast breeder," he says, "is one way the world will have to go. It is evident that we cannot drop a technology that creates more fuel than it burns and is more efficient than the light water reactor by about a factor of 60.

"During the last decade," Guenter continues, "nuclear power has been a main political and social issue in West Germany. The public attention today turns more towards reprocessing and waste disposal. There is hope that under the auspices of the recently elected new parliament and government these tasks will be tackled and solved with more steadiness and verve.

"Germany's first SNR 300 fast breeder reactor is scheduled to start operation in 1986, delayed by years due to increasing licensing difficulties. France's commercial 1200 MW Super Phénix reactor will probably start operation earlier. France is the leader in fast sodium breeder technology, and is fully committed to it, together with an ambitious light water power reactor program. There are already some investigations going on in West Germany about licensing a Super-Phénix-type reactor."

Guenter describes himself as a nuclear physicist. He holds degrees from the Universities of Freiburg and Karlsruhe. He's been employed by the Karlsruhe Nuclear



New Airfoil

DISCUSSING the agenda for the VAWT Aerodynamic Seminar last month are (l to r) Jack Templin from the National Research Council of Canada, seminar coordinator Paul Klimas (9725), and Philippe Fraumie from the University of Marseilles, France.

What Hath VAWT Wrought?

The third annual Vertical Axis Wind Turbine (VAWT) Seminar was held last month at the Central Receiver Test Facility, sponsored by Wind Energy Research Division 9725. Coordinated by Paul Klimas, the seminar brought together over 40 U.S. and foreign researchers and manufacturers interested in recent advances in VAWT aerodynamic design.

"The seminar has been growing by 50 percent each year," says Paul. "This time we invited foreign researchers whom we don't support financially but with whom we exchange information." Among these are the National Research Council of Canada, the University of Marseille's Institut de Mécanique Statistique de la Turbulence, and Hydro-Québec, the large Canadian utility. Also represented were Texas Tech, Ohio State, UNM, and Oregon State Universities.

Two U.S. and two Canadian manufacturers of wind turbine equipment also attended the seminar. "Their presence is an indication that manufacturers are pursuing wind power as a practical source of energy — they're interested in the potential of aerodynamic design to improve the performance of vertical axis wind machines and reduce the cost of energy," says Paul. "That is, we expect to be able to reduce the

cost of the system without sacrificing energy production."

Adds Emil Kadlec (also 9725): "Sandia's VAWT R&D program is expanding. We expect a substantial increase in funding next year with the emphasis on aerodynamic and structural studies.

"In the past we'd go to the airfoil data book and extract standard aircraft airfoil designs to be used as wind machine blades. We're now moving away from that practice and developing specialized airfoil designs. We want a better understanding of 'unsteady aerodynamics' — essentially this means that wind velocity and airflow are unsteady so the blade orientation with respect to that flow is changing constantly.

"The manufacturers were very positive. In fact, hundreds of wind machines have recently been sold. These wind machines are in the 100 to 200 kW range, and they're sold mostly to 'wind farmers' — people who buy a number of wind machines and contract for the use of someone else's land. They set up the machines on this land and sell the energy to the local utility. Incidentally, there are three large wind farms about ten miles east of Livermore."

"We believe that by employing aerodynamic modifications the cost of wind energy can be reduced by at least 10 percent," adds Paul, "and we saw nothing at all at the seminar that would alter that prediction. I expect that this cost reduction will be verified within the year."

Research Center since completing his PhD thesis in 1966.

In Albuquerque he met and married his wife Vicki. She is a nurse at KAFB hospital and lived for more than six years in Paris and Brussels. She knows some parts of Europe better than Guenter.

"My home is in the Black Forest," Guenter says, "so I love the mountains. I have hiked and skied in New Mexico and Colorado. Back in Europe, I will miss the Rocky Mountains powder skiing, a real adventure for me. Skiing and hiking in the Sandias are fine — they're so convenient and close."

Guenter will return to Karlsruhe this year. He will finish the current series of experiments at Sandia. At home, his assignment will continue to be nuclear reactor safety.

WOMEN IN HISTORY



Women have participated in civilization building equally with men in a world dominated and defined by men. Thus, women have functioned in a separate culture within the culture they share with men ... Yet women's culture has remained largely unrecorded and unrecognized. It must be stressed that women have been left out of history not because of the evil intent of male historians, but because we have considered history only in male-centered terms ... To rectify this, we must consider ... the possibility of the existence of a female culture within the general culture shared by men and women.

Gerda Lerner (U. Wisconsin) in *Journal of American History*

Fun & Games

Racquetball Rallye — Several spots are still open for the fun racquetball tourney scheduled for the evening of April 30 at a well-known private club. In fact, about 10 more people are needed to make it fly. So those of you who are already signed up, get a friend to join in. If you're still vacillating, make a decision today and call Tom Lenz at 4-8486 for sign-up. It's going to be a real low-key event — don't let the word "tournament" scare you off. You'll find some new playing partners and have lots of fun in the process. Deadline is April 22.

Basketball Party — The end-of-the-season party for the S.E.R.P. basketball league will be on April 19 at 4:45 in the Coronado Club dining room. All participants are encouraged to attend. Awards will be presented, and lots of drinks and snacks will be consumed. Bring your favorite tales of basketball prowess. ("We're down by six with four seconds to go, I start my drive, and you won't believe what happened" or "I'm guarding this seven-footer, he goes up for the shot, the adrenalin must have really been pumping because I . . ." are sure-fire crowd creators. Veracity is not a hallmark of these events). Praises and gripes about this year's program are also welcome.

Table Tennis — The most vicious team in the recent Table Tennis Association tournament was that comprised of Dale Gresham,

Dale Breeding, Dave Sealey, and Rudy Armijo. Second place team was Gary Gurtiza, Jim Sanchez, Dave O'Brien, and Juan Abeita. The group's next tourney is a Sandia vs. Los Alamos singles and doubles event on May 14 from 10 to 5 at Monroe Jr. High School. Entry fee is \$3 with contestants limited to the first 20 to pay up. More info from Dave Sealey on 4-4475, Jim Sanchez on 4-1908, or Dave O'Brien on 4-5517.

Swimming — The organizational meeting for the Coronado Club Swim Team is on April 20 at 7 p.m. in the El Dorado Room. All buoyant children and their parents are urged to attend this important meeting. Bring questions and concerns as well as a willingness to help. Tom Lenz has more information on 4-8486.

Ski Winners — Skiing at Purgatory will be less expensive next season for the John Kelly (9426) family. Last month John won the senior men's division slalom race, his wife Sissy the senior women's, and daughter Shiloh the 12 & under. Each winner received a trophy and a season pass.

Spring Art — KAFB's Arts and Crafts Center will hold a Spring Art Festival on May 1 at the Main BX. If you'd like to exhibit and sell your crafts or artwork, call 4-0222.

Ham Gams

Sandia Takes CQ-WE Contest

For the second year in a row, the Sandia CQ team of amateur radio operators won the annual CQ-WE contest, a competition among ham radio teams from all of the Bell System locations.

Points are awarded for the number of contacts made between competitors in voice transmission, Morse code transmission, slow-scan television, and radio-teletype communication. Scores are based on total number of Bell System companies contacted as well as total number of contacts.

Sandia scored 104,533 points, overwhelming the nearest competitor.

Jim Baremore (9251) was coordinator of the Sandia team. George Kaye (9351) scored the highest number of points for Sandia. Other team members were Gene Carter (2345), Frank Dean (9351), Ed Graham (2101), Don Holck (2123), John Long (7523), Vaughn Nogle (2345), Jack Webb (2340), Dick Andes (0110), Rich Anderson (2142), Brian Burns (2341), and Tom Jones (8322).



"Medical Corner," which begins here today, is designed to inform you of news in the areas of health and medicine, and to announce upcoming programs, such as classes and lectures, sponsored by the Medical Department.

Starting Over

Medical's upcoming Divorce Adjustment program will consist of two parts. In part one, Frances Koenig, Albuquerque clinical psychologist will present a lecture "Mediation: An Alternative Approach to Divorce Litigation." Mediation involves a mental health specialist as a facilitator who helps divorcing couples negotiate matters of property, finances, and child custody arrangements.

Koenig has presented lectures and workshops to a variety of civic and business organizations and currently serves as president of the New Mexico Psychological Association. She is probably best known for her informative series, "Coping," which was aired regularly on Channel 7's weekend news. The talk will be presented on April 22 from 12 to 12:30 in Bldg. 815 (outside the tech area). Please join us.

Part two of the program consists of Medical's next Divorce Adjustment class, which will be offered April 27 through June 1, Mondays and Wednesdays from 12 to 1 p.m. in the Bldg. T13 conference room. Please contact Arlene Price at 6-0021 for further information.



NAVEL WEARFARE — Three versions of the Sandia belt buckle are now available. The buckle on the left is gold plated and boxed for gift giving (\$20). In the center is the original silver-colored version (\$8). On the right is the new silver-colored smaller buckle (\$8) that fits a one-inch belt. Proceeds go to the South Highway 14 Village Project. Pick up your buckle at the LAB NEWS office, MO-125 (east of Bldg. 814).

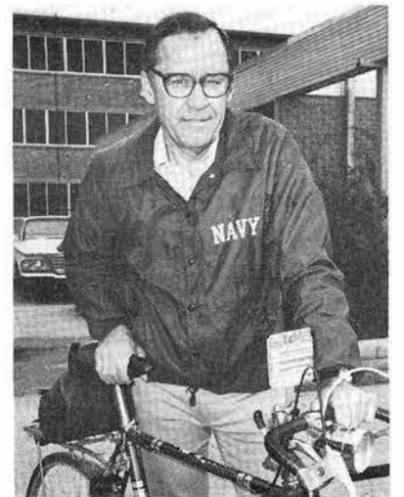
Retiring



Ted Stetz (7126)



Bill Shepherd (7252)



Emery Postenrieder (9041)

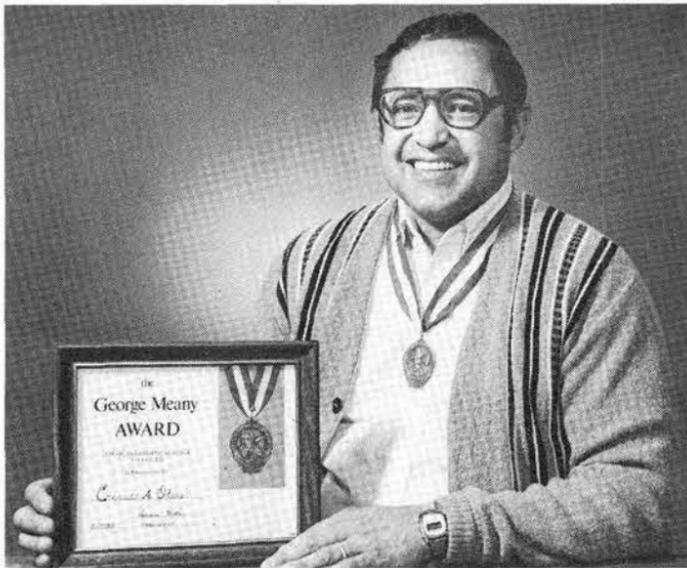


THE 23rd ANNUAL Technical Symposium and Exhibits, sponsored by the NM Section of ASME, will be held May 17 and 18 at the Hilton Inn. Committee chairmen looking over the program are: (l to r) Don Doak (9345), exhibits; John Biffle (1521), administration; Gino Carli (2420), program; and Heinz Schmitt (9340), symposium chairman. The theme of the symposium is Computer-Aided Design, Engineering & Manufacturing — A Challenge to Engineering. Sandians making presentations include George Urish (2545), Paul Erickson (2542), Don Peterson (2424), Bob Gregory (2100), and Don Doak. For registration information, contact Hal Morgan (1521), 844-5368.



LUTHER OTERO (7543), left, is the newly-elected Commander of American Legion Post 13. Also elected to the executive board last week was retiree Mike Silva, right. Luther has been a member of the organization for 20 years and has served in a number of officer positions. The 1800-member Post is the largest in the state.

sandia PEOPLE Report



CONRADO OTERO (7482) recently received the George Meany Award. The national award is given in recognition of community service in two areas — AFL-CIO labor union and the Boy Scouts. Conrado is serving his second term as president of the Metal Trades Council; he has been a Scout volunteer for more than 20 years. Currently, he serves as a district commissioner and as a Scoutmaster. He was presented with a medal and a certificate and is only the 6th New Mexican to receive the award.



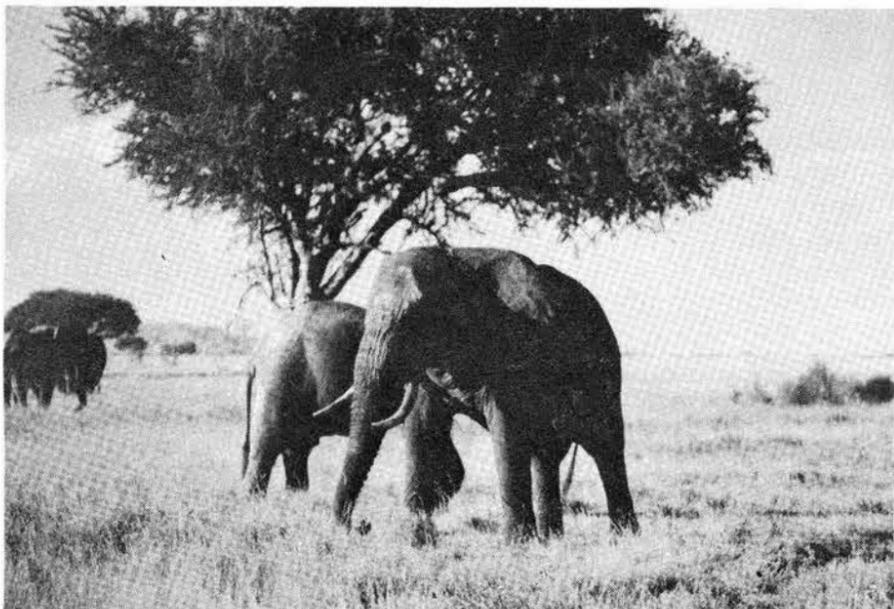
SECURITY FORCE FITNESS PROGRAM — Susan Smith, Mary Helen Perea, and Josephine Chavez (all 3435) jog around the Base track as part of a new physical fitness program. New DOE physical fitness standards go into effect Dec. 31, 1983, with the first test scheduled July 1. Security inspectors in certain categories must be able to run a mile in eight minutes 30 seconds and run a forty-yard dash, starting from a prone position, in eight seconds. Sandia security inspectors are currently about midway in a 21-week physical fitness program designed to help them easily pass the DOE standards. Byron Gardner (3435) is administrator of the program.



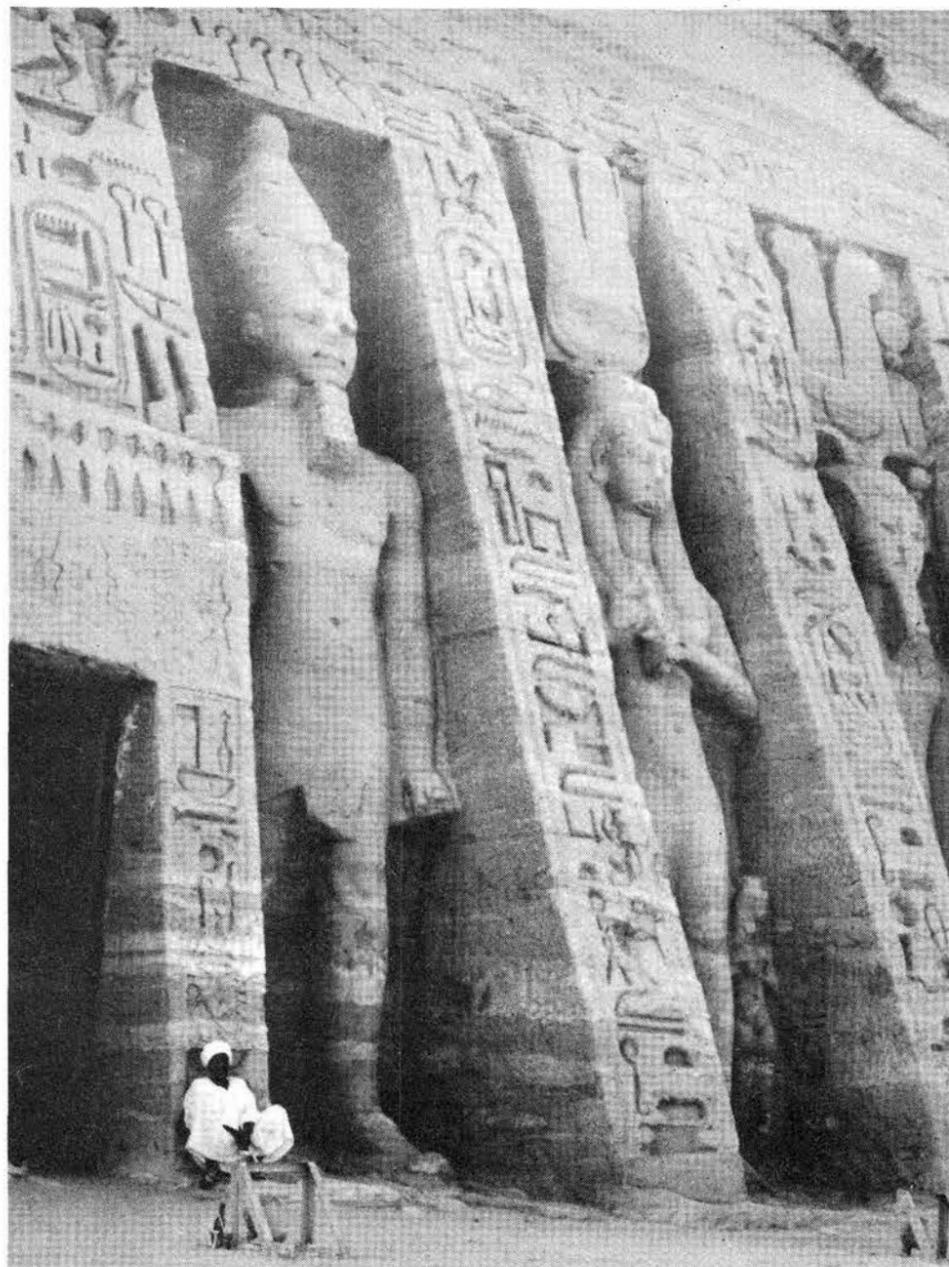
DAILY DEMONSTRATIONS of word processing equipment were one of the features at the Sandia Secretarial Seminar held last week. More than 300 secretaries attended the seminar.



FOR A FIRST-TIME attempt at restoration, George Greer (7435) did an award-winning job on his 1964 Pontiac Lemans. It's a complete restoration — except the engine — including 12 coats of hand-rubbed lacquer. George entered the car in the 3rd Annual Easter Show, sponsored by Styles of Class; he was awarded the 3rd place trophy. George has two problems now: the engine has 138K miles, and it's tough to find a parking place where that super paint job won't get scratched.



ANIMALS from the Serengeti in Tanzania. The guide told Helen that poaching is a big problem on the game reserves, and that encroaching farmlands threaten animals outside the protection of the reserves.



THE FIGURE in the foreground provides scale to judge the enormous stone temples at Abu Simbel.

Unusual Vacation

Africa: Beautiful, Exciting, 'Wonderful'

You could say that Helen Smith is a gad-about. However, if you say that she enjoys foreign travel and has made good use of her time since she retired from Sandia 10 years ago, you would be correct. During that time Helen has visited Australia, New Zealand, the Fiji Islands, Spain, Portugal, Morocco, Egypt and most recently Africa.

"I've always enjoyed traveling," Helen says. "Before I retired I had visited Hawaii, Guatemala, and Mexico. I've spent a lot of time in the southern part of Mexico, and I've seen much of the United States. So travel is nothing new; it's just more enjoyable now that I have the time to do it."

Last year, Helen and a friend, Juanita Parsons, cruised the Nile River in Egypt and took part in an African safari. They signed up for a 29-day tour that included a five-day cruise up the Nile and several days for sight-seeing, with the balance of time spent at game reserves in Kenya and Tanzania.

"We spent some time in Cairo where I visited the museum housing the artifacts from King Tut's tomb. I was fascinated with it all, but still slightly disappointed. Everything seemed to be disorganized and pretty dusty. I had gone out to California to see the traveling King Tut exhibit. Of course it was a unique exhibit for this country, and its presentation was impressive."

The Nile cruise took five days with daily

stops to visit the temples, the Valley of the Kings, and Abu Simbel. The latter, located south of the Aswan Dam, is the site of great stone temples.

"We arrived in Nairobi about a month before the political upheaval last year," Helen says. "At the time, we often commented about how peaceful and beautiful the city was."

The tour group of 22 traveled in a group of five vans. They were entertained by dancers at a Masai village, stayed in the famous Tree Top Lodge, visited Mt. Kilimanjaro, toured the memorial site where Dr. Leakey found evidence of the oldest known human bones, picnicked at the Ngorongoro Crater, watched in awe as a herd of thousands of gazelles skimmed across the Serengeti Plains, and enjoyed the wide variety of birds and animals.

"It was exciting to me to see how close we got to the animals," Helen says. And sometimes they got very close. She has some excellent slides of hippos fighting in a pool where about 50 of them had gathered, of a lioness rearing up to see what was invading her territory, and others of different flora and fauna.

"The trip was wonderful. I correspond with our guide in Kenya. He keeps urging me to return because he and his family can show me so much more than what I saw the first time."

Helen enjoys her children and grand-

children, making jewelry — she teaches a silver casting class at the Palo Duro Senior Center — and gardening. When we talked about this trip, we visited her greenhouse and saw ripe tomatoes on the vine. She and her grandson (who was 16 at the time) built the greenhouse.

Logistics — Trip arrangements were made through a local travel agency. Helen and her friend were the only New Mexicans in the group — two members joined them in New York City, and the others, most of whom were from Canada and England, joined the tour either in Amsterdam or Cairo. Total cost for the trip was almost \$6000. Helen reports that food and accommodations were excellent. "The rooms were what we would call first or second class. They were always clean and included a private bath. The trip home was tiring — once we spent 17 hours in a plane in one day, not always flying, but confined to the plane during numerous stops. We had another span of 14 hours, but I enjoyed the trip; you can rest when you get home."

Helen has a word of advice for people who want to travel but don't care to go alone. "Talk about what you want to do and where you want to go. There may be someone who would like to join you instead of going alone or staying home. Then after you talk about it, do it!"

feed libback

Q. While I was walking east across 9th Street between Bldgs. 892 and 894 recently, a gray government delivery truck traveling north narrowly missed hitting me. The driver was going (I estimate) between 20 and 25 MPH, and did not even slow down. A few seconds later, a blue government van turned from going south on 9th to east on L Street, cornering so fast that tires screeched. I enclose the license number of the truck.

1. Has open season been declared on pedestrians in Area I?
2. Has the speed limit been raised in Area I?
3. If the answer to the first two questions is "no," is there law enforcement and citation activity in Area I, or simply statements of policy from upper management?

A. We share your concern for this long-standing problem. The 15 mph speed limit is a safety rule that, like all other Laboratories rules, requires compliance by all employees. Should you observe traffic violations, please note the type and color of vehicle, the license number, the time of day, and the location. This information should be reported to Safety Department 3440, at 4-3246, for investigation. We have discussed the incident you reported with the truck driver's supervisor.

Because of pedestrian and forklift traffic in Tech Area I, speed limits remain at 15 mph. To enforce this, Security uses a speed gun (radar) at least once a week. During the last such use, three tickets were issued to drivers of government vehicles.

Q. Why does the Library Request Form (SF1075-A) require social security numbers?

A. That form was revised in early 1982 and no longer requires a social security number. No one in the Library knows why the old form asked for that information, and, in fact, it was never used in library processing or in library records. We have tried to have the old forms removed from stock, but your inquiry shows that there are still some around.

H. M. Willis - 3100



SCIENCE DEFINITIONS
FOR OUR TIME

APHASIA n. Loss of speech in social scientists when asked at parties, "But of what use is your research?"

JUNK•GOODIES•TRASH•ANTIQUES•KLUNKERS•CREAM PUFFS•HOUSES•HOVELS•LOST•FOUND•WANTED•& THINGS

CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday. Mail to: Div. 3162 (M0125).

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Submit in writing. No phone-ins.
4. Use home telephone numbers.
5. For active and retired Sandians and DOE employees.
6. No commercial ads, please.
7. No more than two insertions of same ad.
8. Include name and organization.
9. Housing listed here for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

- '67 TRAVEL TRAILER, 20', tandem, self contained, \$3500. Ortiz, 265-7257 after 4:30.
- DROP LEAF maple table w/2 leaves, 5 chairs, & matching hutch. Palmer, 296-2551.
- CAMPING STOVE, Bernzomatic 2-burner, 2 propane bottles, \$20; air mover, Lasko, 20", 3-spd. tilt, new, \$15. Rainhart, 821-3690.
- CRAFTSMAN seven drawer machinist tool box, \$50; repair manual for Honda 400 & 550 four motorcycles, \$3. Barnard, 831-4114.
- DENON DP-1250 turntable, \$300; Grace 707MKII tonearm, \$150; Grace F9E cartridge body, \$50; Dahlquist DQ-10A speakers, \$300. Booth, 296-3955.
- BMX racing bicycle, all racing equip., \$125; Dyna-gym all-body exercising unit, \$125; elec. guitar, Sears solid body w/amplifier. Arana, 299-1214.
- WROUGHT IRON hanging lamp, \$15; 4 hubcaps from 16 1/2" RV wheels, \$20; ladies dress form, \$10; Whirlpool compactor, new, \$200. Butler, 292-8823.
- FURNACE, 75K BTU; bathroom fixtures — sink, stool, chest; hollow-core door in frame; set of tires, D-78-14. Gabaldon, 266-0028 after 5.
- TWO rosewood/glass end tables, one lg. rosewood coffee table; 2 table lamps. Seager, 299-4137.
- 2 COSCO bar stools, swivel, dk. green, seat & back padded, \$50/pr. Kindschi, 256-0531.
- FREE fertilizer: composted horse manure & wood shavings, North Valley location, you dig. Moore, 345-4030.

- METAL DETECTOR, Whites Coinmaster model 5000/D series 1 w/rechargeable battery, \$160. West, 255-5855.
- NEW 23" square-dancing petticoat, white, \$20. Stronach, 255-8315.
- SHOP MANUALS for all '79 Ford passenger products, \$17; 6-hole 6.50x16 Chev. wheels/tires/tubes, used 500 mi., \$35 ea. Getz, 299-4865.
- CHAIR, recliner, yellow-gold w/mahogany sides, \$35; Hanson ski boots, size 8, \$20. Dobranich, 298-4547.
- POOL table, 6', w/cues & accessories, \$125. Hayward, 294-7278.
- ANTENNA for mobile transceiving, auto. band switching on 80, 40, & 20 meters, Swan 742, \$70. Milton, 299-4586.
- WHITE wrought iron patio chairs, matching pair w/30" oblong coffee table, \$75 all 3 pieces. Brown, 821-4355.
- WATER LILIES, hardy w/white flowers, \$8 ea. Halbgewachs, 268-1584.
- LARGE wooden end table w/enclosed storage; 25" Sears color TV, \$125. Prevender, 299-5253.
- UNDERWOOD elec. typewriter, \$40. Kessel, 266-2094.
- FRIEDEN calculator, elec., \$50; bar, solid mahogany, w/wine rack, \$250; 3 18" bar stools, \$15 ea.; 13" color TV, \$100; bookcase, 3-shelf, \$15. Botner, 298-6007 after 5.
- WATER HEATER, 50-gal., used, \$30. Jankowski, 299-7268.
- TIRES: 5 10x15 Uniroyal Land Trac mud & snow, \$125. Wright, 296-3850.
- SEARS radial arm saw & accessories; ping pong table. Buksa, 898-1282 after 5.
- BOAT RACK, adjustable to fit both trucks & cars, \$30. McFadden, 292-2789.
- GEMEINHARDT silver piccolo, \$200; Sears console humidifier, \$50; bed frame, bookcase headboard, \$20; Remington Sportsman semi-auto. 12 ga., \$150. Evans, 299-7105.
- CB Base station, Realistic Navaho TRC 459, PDL II antenna w/HD rotor, power mike, & accessories. Hobbs, 268-6461 after 5.
- 19" B&W Admiral TV & stand, \$38; Sears electric carving knife & case, \$12. Sublett, 884-4426.
- MINIATURE Schnauzer puppies, 6 wks. old, have shots, 3 males, \$125 ea. Helmick, 292-3718.
- YARD SALE, April 16, 9-5, 5333 Veronica NE, off Spain. Baby items, small appliances, more. Heath.
- NEW glass fireplace screen, \$25; antique narrow-back chair, \$20; Garrard 3SP auto. turntable, \$20; port. stereo, \$10. Atkins, 298-5762.
- SHELTIE AKC reg., all shots, spayed, obedience training, \$100. Melville, 296-3378 after 6.

- STEVENS 12 ga. single shot shotgun, full choke, \$50; Raven 25 cal. auto. unfired in box, \$55, prices firm. Brown, 296-9009.
- SAFETY HELMET, size M, \$10; 26 concrete border blocks, 8"x4 1/2"x7 1/2", never used, 40c ea. Buss, 298-1589.
- UNIVOX nightclub microphone w/stand, new, \$80; Texas Instruments transducer acoustic guitar pick-up, \$15. Holmes, 836-1428.
- SHELL for short wide pickup, two bunks & interior lights, best offer. Syler, 299-2941.
- TRAILER for hauling Jeep, \$500. Falacy, 293-2517.
- COMPUTER disks, printers, misc.: electronics; components, misc.; oscilloscopes; bike parts 20" bike; toys; books; gas range; more, 4/16. Mayer, 294-3368.
- SOFA & loveseat, \$75; carved panel front door, \$20. Newcom, 293-5180.
- PUPPIES, Sheltie-cross (Spitz, Australian Shepherd), one male (sable), one female (white w/sable), 12 wks. old, shots, \$10 ea. Olman, 884-4663.

TRANSPORTATION

- '81 FORD Granada GLX, 4-dr., 6-cyl., AC, PS, AM-FM-8TK, elec. windows & seat, cruise, power locks, 33,500 miles, \$6200. Hamilton, 821-2058.
- '77 SCIROCCO (VW), 50K miles, new paint, louver windows, AM-FM cass. stereo, radials, \$3750. Pierce, 883-2719.
- SCHWINN Continental 10-spd. bicycle, \$115; '79 Mazda wgn., 4-spd.; '79 Mazda HB, AC, 5-spd.; '79 Dodge Omni, 4-spd., \$3000 ea. or best offer. Roeschke, 298-0365.
- '69 FORD Country Squire wgn., AT, PS, PB, AC, cruise control, \$450. Widman, 293-7279.
- '78 YAMAHA, 125cc Enduro, 7K miles, adult ridden, \$495 firm. Hymer, 293-6029.
- '82 BMW R100S, 3800 miles, black w/red & white pinstripe, voltmeter & quartz clock, \$3875. Letson, 294-6691.
- '76 NOVA 2-dr., 6-cyl., AT, AC, \$1400. Prevender, 299-5253.
- '77 TOYOTA Celica liftback, 42K miles, 5-spd., AC, AM-FM-8TK, cruise, new tires, orig. owner, \$4000. Jensen, 299-4823.
- '80 YAMAHA SX400, Xtra Lites winter suit, helmet plex fairing, 3600 miles, \$1300 firm. Buza, 298-1531 after 3.
- '78 CADILLAC Coupe DeVille, white w/blue interior, cruise control. Beck, 256-3350.
- '82 CHRYSLER convert., Mark Cross Limited Edition, fully loaded, 11K miles, \$13K. Koontz, 821-8952.

- '81 VW Jetta diesel, 2-dr., AM-FM cass., AC, sun roof, 42/52 mpg, listed avg. retail \$7300, make offer; '80 Puch moped, 100 mpg, \$350 or make offer. Pope, 293-1072.
- '78 FORD Courier pickup, AC, 31K miles, 24/30-33 mpg, \$3350. Hayward, 294-7278.
- ALUM. fishing boat, 14' w/trailer, life-jackets, oars & other extras (no motor), \$500. McFadden, 292-2789.
- '79 FIAT X1/9, 5-spd., AC, AM-FM cass., 25/35-40 mpg., \$4600. Moody, 294-0482.
- '82 FIREBIRD, AC, PS, PB, AM-FM cass., \$8700, will take \$800 down, take over payments. Coffin, 266-4610.
- '73 MAZDA RX-2, 5 new Michelin tires, \$1000 or will consider trade. Walters, 293-5381.
- CATAMARAN, Prindle 16', w/trailer, \$2600 or best offer, will consider payments. Zeuch, 296-4969.
- '72 CUSTOM Triumph 650 Bonneville motorcycle, \$2000. Gonzales, 344-4933.
- '71 DODGE window van, AT, PS, \$1000. Doyal, 299-5688.
- '77 YAMAHA motorcycle, YZ400 dirt bike, \$800. Wright, 296-3850.
- '76 YAMAHA RD400, \$650 or best offer; '78 Yamaha DT-175, \$495. Swahlan, 294-2126.
- '66 MGB, OD, \$1200; '77 Honda CJ-360, new tires & brakes, \$800. Eichert, 266-3786 (leave message).

- '80 SUBARU DL, 4-wd HB, AM-FM, custom velor interior, 22K miles, below book value. Beasley, 298-8911 or 262-2221.
- '81 MAZDA GLC custom 4-dr. sedan, 4-spd., AM-FM, 12,500 miles, orig. owner, \$4400. Sprankle, 822-0326.
- 18' ARROWGLASS ski boat & trailer, 120HP, inboard/outboard, \$3700 or best offer. Apodaca, 294-4945 after 5.
- '75 CORVETTE convert., low mileage, 2 tops, 4-spd.; left handed D-41 Martin guitar w/hard case; Western Wood competition Mach 3 slalom water ski. Perryman, 281-3020.
- '69 CHEV 4-dr. Impala, AT, PS, PB, AC, 350, 69K miles, passed emission test, \$1200. Brown, 296-9009.
- '72 CHEVY Malibu 2-dr., radials, AT, AC; 21" bicycle, alloy parts, quick release brakes, wheels, cotterless cranks. Larsen, 299-3496.
- '75 DATSUN B210, 44K miles, extra mounted snow tires & wheels, \$1990. Falacy, 293-2517.
- '77 DODGE VAN B200, 318, AT, AC, PS, PB, extra windows, 80w stereo, \$3500. Kocinski, 242-8418.
- '80 KAWASAKI motorcycle classic 1000, 1500 miles, fuel injection. Herrera, 836-1768.
- BIKE, Liberia 19" frame, \$185. Mayer, 294-3368.

- '81 SUBARU DL wagon, 4x4, A/C, 16-mos.-old, under 14K miles, \$5850. Stone, 821-5070.

REAL ESTATE

- IRRIGATED farm land in Bernalillo, approx. 2 1/2 acres, 15 mins. from Abq., \$55K. Gonzales, 294-6823 after 5.
- SPLIT-LEVEL house, 4-bdr., 2 bath, rec. room, could be two units, \$69K. Shelton, 255-8264.
- 3 ACRES North El Cerro Loop, irrigated, good stand of alfalfa, \$11K/acre. Kadlec, 265-2915.
- FIVE wooded acres 12 miles on S14, south facing slope for solar project, power, phone, proven water, \$25,800. Meikle, 299-4640.
- ONE ACRE solar building site, 5 miles NE of base, 7 miles from Winrock. Westman, 881-0471.
- 2-BDR. condominium, 990 sq. ft., clubhouse, pool, tennis court & more, 8% assumable mortgage, \$49,700. Hill, 881-8633.
- HOUSE, 2209 sq. ft., \$91,500, owner finance @ 10%-28% down, 3-bdr., FRM LR, DN, 1 1/2 bath, lg. rec. rm., dbl. gar. w/RV parking, extras, 15 mins. to base. Vigil, 293-7140 or 836-4566.

WANTED

- STD. TRANS. for '63 International Scout. Ortiz, 265-7257 after 4:30.
- BABY CRIB. Palmer, 296-2551.
- SUMMER HOUSING for friendly, responsible graduate student; house sit or rent. Write to S. Bischke, 2130 Walnut #25B, Boulder CO 80302.
- BRA for '80 Datsun 280ZX 2+2, good condition. Wilson, 298-6427.
- INEXPENSIVE housing for summer graduate student beginning May 22. Will rent room or mobile home, share apt. Larry Hudson, 601-924-8439. MC Box 4321, Clinton, MS 39058.
- RADAR detector, Superhet circuit. Kessel, 266-2094.
- HOUSE for rent/lease July 1 in NE area, 3-bdr., 2 bath, dbl. car garage. Orbesen-Pittman, 821-4249.

WORK WANTED

- HOUSE & apt. painting, UNM student paintshop, estimates, references. Peter Shunny, 266-0266.

SHARE-A-RIDE

- RIDER from Star Heights area of Rio Rancho to Sandia & back 3 days a week, \$1.25 each day you ride. Mowry, 892-6226.

T-Bone Tonight

TONIGHT at Happy Hour, the served dinner feature is a 16-oz. T-bone steak for \$7.25. Kids pay \$4. On the bandstand, a country and western favorite — a group called Chisum — plays for dancing. Happy Hours start right after work with special prices in effect until 7:30 when the music starts. Dinner is from 6 to 8:30.

A FASHION SHOW is an extra treat during the luncheon period Monday, April 18. Five models will present a selection spring and summer casual fashions from Shma-Tays of Brentwood Center. Three separate shows will be performed between 11:30 and 1 p.m. In honor of the occasion, the Club has luncheon specials — a super club sandwich for \$2.95, a crab meat salad for \$3; and a breast of chicken lunch for \$4.25. The Coronado luncheon service is open to anyone on Base and features daily specials in addition to the regular selection of soup, sandwiches, and salads.

NEXT FRIDAY, April 22, sees another outstanding dinner on the calendar. It's your choice of 8-oz. lobster tail or 10-oz. New York strip steak for \$8. On the bandstand is Frankie and the Corvettes.

KING CRAB is offered as the Tuesday Two-for-One Special on April 26. Served in a candlelit dining room from 6 until 8:30, dinner for two costs \$11.50. At the piano, Alex Montoya plays your requests.

GAMES NIGHT every Thursday at the Club start with an early bird special at 6:45 p.m. Regular game play starts at 7. Super sandwiches are available. There's lots of excitement in the action. Players are enthu-



CASUAL FASHIONS from Shma-Tays of Brentwood Center will be presented in three shows during the luncheon period at the Coronado Club on Monday, April 18. Models are Brenda Sprague, Annie Cole-son, and Vicky Gentry. The Coronado Club luncheon service, open to anyone on KAFB, is from 11:30 to 1 Mondays through Fridays.

siastic. Check the poster in the Club lobby for details.

SWIM SEASON pool and patio tickets are now on sale in the Club office. Singles pay \$12.50; couples, \$25; and families of three or more, \$37.50. The Club offers the most attractive facilities in the city and the best swim season prices. The twin pools open Friday, May 27, with the grand opening party scheduled Memorial Day, May 30.

TRAVEL PACKAGES offered by the Club include Las Vegas May 29-June 1 by bus for \$122 or May 29-31 by air for \$146; Puerto Vallarta May 19-26 for \$384; Chaco Canyon May 14 for \$24; and China in mid-September for three weeks, \$2810. See

travel director Shirley McKenzie (2432) in the lobby tonight between 5 and 6 or call her on 4-6886 for travel information.

Atmospheric fronts, shock waves, and snowflakes will be among the topics of discussion at an International Nonlinear Studies Conference to be held May 2-6 at Los Alamos. The conference, entitled "Fronts, Interfaces, and Patterns," will cover physical phenomena that primarily occur from unstable chemical, mechanical, and thermal processes at the moving boundary between interacting materials. A better understanding of these phenomena is important for all scientific studies, including the fields of meteorology, explosives, and fluid dynamics. The deadline for advance registration is today; call 843-1444 (FTS).

Deaths



Paul Armijo of Systems Engineering Division 9238 died March 27 after a short illness. He was 30.

He had worked at the Labs since September 1978.

He is survived by his widow. His father, Ben Armijo, works in Division 3418.



Joseph Billings of Reclamation Division 3418 died April 4 after a long illness. He was 57.

He had worked at the Labs since August 1952.

He is survived by two daughters.



"Here, lemme check these B83 delivery system specs again."